SCH 4U – Unit 1 Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Electron Configuration Worksheet**

Circle the correct answer for problems #1-7  
Which letter best *fits* the statement?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Problem 1: *s* orbital | a) dumbbell | b) n=1 | c) *l*=0 | d) *l*=1 |
| Problem 2: *p* orbital | a) dumbbell | b) n=1 | c) *l*=0 | d) +½ |
| Problem 3: n | a) number | b) *l*=0 | c) shell | d) +½ |
| Problem 4: angular quantum number | a) spherical | b) n=1 | c) shell | d) *l*=0 |
| Problem 5:↑ | a) +½ | b) x | c) s | d) *l*=0 |
| Problem 6: Pauli exclusion principle | a) spherical | b) *l*=0 | c) *l*=1 | d)↑↓ |
| Problem 7: magnetic quantum number | a) spherical | b) *x,y,z* | c) *l*=0 | d)↑↓ |

Problem 8: How many electrons are in this element that has this electron configuration?  
1s22s22p3

Problem 9: How many electrons are needed for this element to complete the octet in shell 2 (n=2)?  
1s22s22p3

Problem 10: What is this element?  
1s22s22p3

Problem 11: Which orbital is being filled in the alkali metal column?  
  
Problem 12: Find the element in period 3 and group 17. What is its full electron configuration starting with 1s2?   
  
Problem 13: The electron configuration of indium is [Kr]4d105s25p1. Indium forms compounds with chlorine. One is indium (I) chloride, formula InCl. What electron do you think indium gave up?  
  
Problem 14: Another compound of indium and chlorine is indium (III) chloride, formula InCl3. What electrons do you think indium gave up?  
  
Problem 15: The electronic configuration of zinc is [Ar]3d104s2, which is also written [Ar]4s23d10. What 2 electrons does zinc lose when it forms an ionic bond?  
  
Problem 16: What 3 electrons does aluminum lose when it forms an ionic bond? .

SCH 4U – Unit 1 Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Electron Configuration Worksheet - ANSWER KEY**

Circle the correct answer for problems #1-7  
Which letter best *fits* the statement?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Problem 1: *s* orbital | a) dumbbell | b) n=1 | c) *l*=0 | d) *l*=1 |
| Problem 2: *p* orbital | a) dumbbell | b) n=1 | c) *l*=0 | d) +½ |
| Problem 3: n | a) number | b) *l*=0 | c) shell | d) +½ |
| Problem 4: angular quantum number | a) spherical | b) n=1 | c) shell | d) *l*=0 |
| Problem 5:↑ | a) +½ | b) x | c) s | d) *l*=0 |
| Problem 6: Pauli exclusion principle | a) spherical | b) *l*=0 | c) *l*=1 | d)↑↓ |
| Problem 7: magnetic quantum number | a) spherical | b) *x,y,z* | c) *l*=0 | d)↑↓ |

Problem 8: How many electrons are in this element that has this electron configuration?  
1s22s22p3 2+2+3 = 7

Problem 9: How many electrons are needed for this element to complete the octet in shell 2 (n=2)?  
1s22s22p3 3 missing electrons from the 2p shell

Problem 10: What is this element?  
1s22s22p3 Nitrogen (N)

Problem 11: Which orbital is being filled in the alkali metal column?  
 the s orbital

Problem 12: Find the element in period 3 and group 17. What is its full electron configuration starting with 1s2? Chlorine (Cl) 1s22s22p63s23p5

Problem 13: The electron configuration of indium is [Kr]4d105s25p1. Indium forms compounds with chlorine. One is indium (I) chloride, formula InCl. What electron do you think indium gave up?  
 The 5p1 electron

Problem 14: Another compound of indium and chlorine is indium (III) chloride, formula InCl3. What electrons do you think indium gave up?

5s25p1

Problem 15: The electronic configuration of zinc is [Ar]3d104s2, which is also written [Ar]4s23d10. What 2 electrons does zinc lose when it forms an ionic bond?  
 4s2  
Problem 16: What 3 electrons does aluminum lose when it forms an ionic bond?

Al: 1s22s22p63s23p1

Al3+: 1s22s22p6 *(3s23p1 electrons are lost)*